

REMARKS:

These remarks are set forth both in response to the office action mailed April 11, 2003 (the "Present Office Action"). As this amendment has been timely filed within the three-month statutory period, neither an extension of time nor a fee is required. Presently, claims 1 through 18 are pending in the subject patent application (the "Application"). In the Office Action, however, each of claims 1 through 18 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,275,912 B1 to Haba ("Haba") in view of U.S. Patent No. 6,275,912 to Erickson, and further in view of U.S. Patent No. 6,148,377 to Carter et al. ("Carter"). In response, the Applicant has set forth a duplicate explanation of the invention as claimed in the Patent Application in supplement to that expressed in the response of January 14, 2003 (the "Previously Filed Response"), a recounting of the deficiencies of the Haba and Carter references in respect of the claimed aspects of the invention as expressed in the Previously Filed Response, and a detailed explanation of the deficiencies of the newly cited Erickson reference.

Beginning first with the summary review of the method and apparatus for high speed interprocess communications ("IPC"), in conventional IPC, multiple processes can communicate with one another via the use of a shared region of random access memory ("RAM") to which each process can write data, and from which each process can read data. When communicating through the shared region of RAM, a first process functioning as the message source can write the message to the shared region of RAM. Subsequently, the second process, functioning as the message receiver, can read the written message from the shared region of RAM. Thus, minimally, two system calls are required to move n bytes of data from the first process to the second process through the shared region of RAM. Moreover, $2*n$ bytes of data will be stored in total— n bytes into the shared region of RAM, and n bytes into user memory space associated with the second process.

To overcome the excessive overhead associated with conventional IPC utilizing a shared region of RAM, the high speed IPC method and apparatus of the present invention avoids moving $2*n$ bytes of data by passing to the second process, not a full copy of the data, but merely a memory offset into the shared region of RAM from which point the second process can access the data. *Advantageously, the memory offset can be absolute relative to a commonly*

known address in the shared region of RAM so as to avoid problems arising from different memory mappings by each process of the same shared region of RAM. In this way, message passing in the high speed IPC method and apparatus of the Applicants' invention does not require storing message data in operating system kernel space. As such, system calls further are not required to write and read data. Thus, the elevated risk associated with using operating system kernel space arising from the loss of CPU control by a communicating process can be eliminated.

Turning now to the rejections on the art, in paragraph 1 of the Present Office Action, claims 1 through 18 have been rejected as an obvious variation of the combination of Haba, Erickson and Carter. Haba relates not to high speed IPC, but to a more efficient means for flushing data to a mass storage device. In particular, in Haba it has been recognized that "hardware devices", which are defined to be hard disk drives, and more particularly, which are not to be defined as RAM, are the source of performance bottlenecks in as much as the operative rate of a hardware device pales in comparison to the performance of RAM. Yet, in Haba it is further recognized that RAM cannot provide the persistence necessary to address the reliability concerns of many applications.

In any case, in the Present Office Action, the Examiner contends that the concept of "memory offset" is shown in "col. 1-15" of the Haba reference. If the Examiner had referred to column 1, lines 1 through 15 of the Haba reference, the Applicants' respectfully request that the Examiner show with particularity where exactly the term "memory offset" or any like term has been expressed in the context of which the term "memory offset" has been expressed in the Previously Filed Response and in the claims of the Application. Similarly, if the Examiner had referred to columns 1 through 15 of the Haba reference, the Applicants once again request that the Examiner point out with particularity where in the Haba reference, the concept of "memory offset" has been expressed.

Notwithstanding, the Applicants presently note as the Applicants had noted before in the Previously Filed Response, nowhere in Haba is it ever suggested that data in shared RAM can be accessed through a memory offset which can be defined relative to an absolute position in RAM so that both communicating processes can access the same data. Moreover, the Examiner has never shown a teaching in Carter which can satisfy the express "memory offset" language of the claims of the Application. In this regard, in Carter data is passed by value and not by reference

from process to process. In Haba, too, data is passed by value as it is flushed to disk. Indeed, page 8, lines 18-19 of the Application explicitly state, "Processes are notified of the location for the message data rather than actually receiving a copy of the message data." So much has been recited in claims 1 and 13 of the Application.

Even the recently cited Erickson reference does not teach the addition of a "memory offset" to a message list of a second process as recited in the independent claims of the Application. Rather, Erickson relates exclusively to the movement of control messages between matrix cards in an intercom system. As a part of the movement of the control messages, a transmit queue can be established in dual port RAM. As described in column 7 of the Erickson specification, when a control message is to be sent from a source matrix card to a destination matrix card, the message can be loaded into the transmit queue and an offset to the last word in the message can be retained. Subsequently, the offset can be transmitted along with the message to the receive queue of the destination matrix card. The destination card can use the offset to place the message in the exact matching location of the receive queue as had been the case in the transmit queue.

Significantly, each bit of data in the message is transmitted from one card to the next. Under no circumstance is the offset passed alone between cards so that the message can be shared between two matrix cards without requiring the copying of actual data. As the Examiner will recognize, the behavior demonstrated by the Erickson invention as expressed in column 7, lines 31 through 65 is the precise type of behavior which the Applicants' invention seeks to avoid--a 2*n copying circumstance! Thus, to combine Erickson with any art in support of a rejection of the claims of the Application is to defeat the operation of the invention in the first place--a prohibited combination under the expressly stated rules of the M.P.E.P. Notwithstanding the complete failure of Erickson to teach the deficient aspects of Haba and Carter, Erickson actually teaches away from the notion of the Applicants' invention. Accordingly, the combination of Haba, Erickson and Carter, even where ill-formed, fails to teach the Applicants' invention.

In the event that the Examiner cannot produce a specific reference in Haba, Carter or Erickson to the addition of the "memory offset" to a "message list" of a "second buffer", the independent and dependent claims of the Application are *prima facie* patentable. Accordingly, the Applicants respectfully request the withdrawal of the rejections under 35 U.S.C. § 103(a)

based upon the Applicant's foregoing remarks. In that regard, each of claims 1 through 18 are believed to be allowable, and accordingly, the entire Patent Application is believed to be in condition for allowance. Consequently, such action is respectfully requested. To that end, the Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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